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IN TWO SECTIONS

Section I

IN THIS ISSUE

Accounting for Heavy Machine Construction, by A. J. Buckenmyer... 1119

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EDITORIAL DEPARTMENT NOTE

So much of cost accounting literature is concerned with the methods of the company which manufactures a more or less standard line of products for inventory, that the problems of a cost accounting nature of the company which builds to order and installs or erects on the customer's premises are not generally appreciated or understood. For such a company the problem of budgeting is made difficult because each order is special, standard costs are of limited use for the same reason, material control is complicated because the material is scattered over several jobs, payroll accounting and payroll tax recording provides problems because much of the erection labor is temporary and there is little opportunity for proper timekeeping procedure, and profit determination is of special difficulty due to the long period involved in manufacturing and installing a single unit and the servicing which must be provided out of the income from the sale. Because the article in this issue of the Bulletin describes how these problems are solved by one company in the industry, we are certain our members will find it interesting and informative.

The author of this article, A. J. Buckenmyer, is an Ohioan, born near Toledo, educated at the Swanton (Ohio) High School and at Ohio State University, from which he holds the B. A. and M. A. degrees, awarded the C. P. A. degree by the State of Ohio, and employed in that state since his graduation from college in 1927. During college days he was employed part time in the accounting department of F. & R. Lazarus Co., a Columbus department store. Upon graduation he spent the winter season in public accounting work with Ernst & Ernst at Youngstown, Ohio, and in 1928 joined his present company, the Surface Combustion Corporation of Toledo, Ohio, with whom he now occupies the position of Assistant Secretary and Assistant Treasurer. Mr. Buckenmyer is Director of Publications for our Toledo Chapter.

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NATIONAL ASSOCIATION OF
COST ACCOUNTANTS

JUNE 1, 1938

ACCOUNTING FOR HEAVY MACHINERY CONSTRUCTION

By A. J. Buckenmyer, Assistant Secretary and Assistant Treasurer, Surface Combustion Corp., Toledo, Ohio

THE business to which this discussion refers is the manufacture of large custom-built furnaces. They are manufactured either according to specifications supplied by the customer or to accomplish a result required in a customer's manufacturing processes. Since the furnaces are usually too large to ship complete, they are partially manufactured in our own plant and shipped in sections. Part of the materials are shipped direct from vendors' plants to the location of the customer's plant. Final assembly, completion of erection, installation and tests take place in the customer's plant.

In a business such as this there are certain peculiar features and special problems which require special attention and treatment. I aim to discuss only the special problems which differ from conditions which are common to all manufacturing companies.

The Proposal

In the special equipment branch of this business the equipment sold is specially designed. There are no two machines exactly alike with the exception of those included in a group sale on one order. Consequently, when a request for a quotation is received it is necessary to estimate the cost and calculate the selling price of the proposed unit. In some cases the unit desired is similar enough to a previous unit quoted on or sold so that the same cost estimate may be used. In many cases parts of previous estimates can be used.

When a request for a quotation is received the estimating department immediately makes a rough design of the proposed furnace. The quantities of the various types of material that will be needed for each furnace section are then calculated on standard estimating sheets. This sheet is used for each section with the types of material printed on the different sheets. Each sheet is 11″ x 17″ in size and made to fold to 8½″ by 11″. Each sheet

has common headings for the various columns, divided into various material, labor and burden items under factory costs and into various material, labor and burden costs for engineering design and erection costs. (See Form 1A at the end of this article). After the quantities are all estimated for all sections of the furnace, the quantities are converted into dollar values and carried to a summary sheet (Form 1B) in the same manner as the public accountant builds up his work sheets. From the summary sheet the cost values are carried to a pricing sheet classified by various types of company contributions (Form 2). For example, the part consisting of labor and factory overhead takes one pricing factor, while material which merely clears through our plant without any labor added would take another factor in determining the sales price.

After the estimating and pricing have been completed, a formal proposal is written up to be submitted to the customer. The proposal describes in considerable detail what is to be furnished in connection with the contemplated order including specifications, the conditions under which the work is to be done, the price, the insurance to be provided, and other items of similar nature. The proposal then becomes a basis upon which the sales department actively solicits the order from the customer. Of course, only a certain percentage of the proposals actually submitted are converted into orders. The difference between a good and a bad year in orders received depends more upon the percentage of proposals turned into orders than upon the number of proposals submitted because it has been found that the number of proposals submitted during a depression is not materially less than during a period of good times.

Customer's Purchase Order

Upon receipt of the customer's purchase order the first step is a detailed inspection of it and comparison with the proposal submitted. On large orders there are almost invariably changes made by the customer, and insurance and other clauses are included which are contrary to the terms of similar clauses contained in our proposal. Of those affecting the accounting work we have found the "hold harmless" indemnity clauses especially troublesome. This subject alone is worthy of separate discussion

if one is engaged in doing construction work for large corporations. Suffice to say that many large companies require contractors who do construction work on their premises to agree to assume liability for any injury or damage to person or property which occurs in connection with the construction whether the injury or damage results from the negligence of the contractor, of the purchaser, or otherwise. It is obvious that if such liability is assumed you find yourself held responsible for conditions over which you have no control. Constant and persistent objections to these clauses over a period of time bear satisfying results.

When the kinks have been ironed out of the customer's purchase order, the company order is entered on a ditto master with copies going to the design, factory production, factory, shipping, cost, billing and other interested departments for action at the proper time.

Design

The drafting and design department carefully goes over the proposal and the customer's purchase order and proceeds to design the furnace. Complete general and detailed drawings are made and a detailed bill of materials listed by furnace sections showing all of the material and parts which go into the furnace. The required number of ditto copies are run off and distributed to the factory, stock, cost, purchasing, file and wherever else they are required. On a large furnace anywhere from one to three months elapse from the date of receipt of the order to the time of completion of bill of materials and drawings. The drafting room is quite a sizable department in a company producing this type of equipment.

Ordering Materials

In special equipment work of this kind where only a limited amount of material is standard, it is undesirable to carry a large proportion of the material required for a furnace in plant inventory. Therefore, upon receipt of the bill of materials by the stock department they look through the items, marking those which are in stock, or which are normally carried in stock, and accordingly ordered by them. Other items are marked to be special ordered and shipped to the factory, and others to be or-

dered shipped direct from the vendors' factories to the location of the customer's plant. A copy of the bill of materials then goes to the purchasing department and orders are placed for those items which are marked to be special ordered and shipped to the factory and for those which are to be ordered shipped direct to the customer's plant. For material to be special ordered for the job, the bill of materials acts as the requisition authorizing purchase.

Manufacturing

As previously stated, the furnaces are usually built up into convenient sections in the factory and the sections shipped to the location of the job. The separate sections usually comprise fabricated steel side walls and end sections, alloy drive sections, burner equipment, the base section, top section, piping, charge and discharge mechanism, conveyors, and other parts depending on the size and type of furnace. Some small furnaces are built complete in the factory. In larger furnaces various sections are often permanently fastened together, and in some cases even the brick work and insulation are installed before shipment. In other cases almost the complete assembly is done in the field. Between these extremes all combinations will be found.

Erection and Installation

As soon as the principal part of material is shipped from the factory and the customer is ready to have erection started, an erection engineer is sent to the customer's plant. He is given an advance to cover costs and he accounts for the amount advanced by the imprest cash method. When he reaches the premises he proceeds to hire the necessary millwright, mason, pipe fitter, carpenter, and common labor and completes the fabrication and assembly of the furnace, finishes the final piping and brick work, and tests the furnace before putting it into operation. Standard tool boxes are furnished by the company and are rotated from job to job. The labor required by the erector is hired at the location of the customer's plant and is largely nonrepetitive although there are a certain number of workers who go from job to job and work for various erectors.

Regardless of the care and foresight used in preparing the bill of materials, it is always necessary for the erector to purchase some materials or tools. If paid by cash, he obtains a receipted invoice to support the charge which he includes on his expense report. If he buys on credit, he issues an Emergency Purchase Order in quadruplicate (Form 3). The original copy goes to the vendor; the duplicate to the home office purchasing department when the order is placed; the triplicate to the purchasing department accompanying the approved vendor's invoice; and the quadruplicate remains in the erector's book. When the vendor's invoice is approved and passed by the erector, he makes proper notation on his copy. The purchasing department does likewise in passing one copy with the invoice to the accounts payable section. These notations are the best available insurance against making duplicate payments on this type of purchases.

Finance

Where contracts involve construction work and extend over a considerable period of time, varying from one or two months to over a year, it is desirable to arrange the terms of sale so that the customer will pay all or a part of the job costs as the work on the contract proceeds. One method used consists of invoicing the customer for a percentage of the sales price when a certain percentage of the material is shipped from the factory, billing another percentage of the sales price when erection is started, and making the final billing upon acceptance of the equipment. Another method consists of billing the customer for proportionate parts of the total sales price depending upon the estimated cost incurred to date compared with the total estimated cost of the job. Any method acceptable to the purchaser which avoids tying up too much money in construction work by the contractor is satisfactory.

Cost and Accounting Procedures

For control and record purposes the factory costs are accumulated and kept separate from the other costs on the contract until the material is shipped from the factory. There are a certain number of common parts for which standard costs are used. There are other parts on which we have no standard costs. As

soon as the blueprints and bill of materials are completed, the standards department inspect their copy. For those items which require factory labor and have no established standard cost or labor allowance, they determine the proper routing and set up labor allowances, where it is possible to do so with reasonable accuracy. The labor allowances plus the standard allowances, where there are already standard costs, become the basis of a group bonus plan with the bonus based on savings of actual labor over allowable labor. All labor expended on special work on the furnace is charged by time tickets to the order number, and the time tickets are accumulated in a cost envelope.

Materials listed on the bill of materials which have to be special ordered and shipped into the factory are costed on the bill of material (cost department copy) on the basis of the actual costs as shown by the vendors' invoices which clear through the cost department. When the material on the contract is completely shipped from the factory, a cost journal entry is made clearing the cost from the factory inventory accounts and into a "Construction Contract" account representing costs on special contracts outside of the factory. At that time a summary of the costs is made and forwarded to the special cost department, and the costed bill of material is also forwarded to the latter.

The drafting and design labor is recorded on semi-monthly time cards (Form 4), cleared through the payroll department, and recorded by the special cost department in the Construction Contracts Ledger. Materials shipped direct to the location of the job from the vendor's plant are recorded direct to the Construction Contracts Ledger from the vouchers. Erection and outside labor costs are recorded from vouchers reimbursing the erector direct to the Construction Contracts Ledger. The final costs are accumulated and held in this ledger until such time as the job is completed and accepted by the customer, at which time they are closed to cost of sales.

Wherever you have the problem of construction extending over a considerable period of time you also have the problem of deferred charges to earnings for costs incurred and deferred credits to earnings for billings made in advance of the completion of contracts. As previously stated, it is desirable where possible to make billings on the contract as the work progresses. How-

ever, these billings cannot be credited to sales at the time when they are made without distorting the earnings picture and recording profits before they are earned. This is especially true where the costs are deferred until the completion of the contract and where the nature of the contract is such that no true picture of the final cost can be had until the contract is completed. Where the nature of the contract is such that definite costs can be allocated to definite completed portions and where the ratio of accumulated costs to the total costs can be fairly closely determined, as in the case of the construction of a building, it is probably proper to close proportionate parts of sales and cost of sales to earnings as the contract progresses. However, this is not true where the final product is a complicated piece of machinery which might or might not work when the machine is supposedly completed, which may on occasion require extensive additional costs to obtain the required results, and where trial operations are included in the specifications of the contract. In other words, when the final cost incurred prior to acceptance may bear no reasonable relationship to the originally estimated cost and to the actual selling price, there is only one conservative method of handling the accounting, that is, to defer both cost and sales closeouts until the contract is accepted by the customer.

The accounting method followed in deferring billings involves making a credit to some account such as "Billings on Incomplete Contracts" at the time the customer's account receivable is charged. The amount billed on each contract is held in this account as a balance until the time of final acceptance of the equipment by the customer, when a credit is made to sales, the charge being to this account.

This method has the effect of placing on the books two deferred items, the "Construction Contract" account being a deferred charge and the "Billings on Incomplete Contracts" being a deferred credit. It is interesting to consider these from the standpoint of the balance sheet and for property and intangible tax purposes. They will usually be approximately equivalent in amounts and will often actually exceed the amount of customer's accounts receivable. One method which is found satisfactory is to show on the balance sheet the smaller of the two accounts as subtracted from the larger, listing the net either as a deferred

charge or a deferred credit as the case may be. It has been noted that the General Electric Company on its published balance sheet lists all of its current assets including construction contracts and shows the advance billings on incomplete contracts as a deduction from the total current assets.

Companies having this type of product find it highly desirable to set up reserves for servicing of products. Since a certain amount of no-charge replacement and service work is necessary after jobs are completed and closed, it is desirable to provide service reserve by charging each job an appropriate percentage of its total cost or sales price. Otherwise future periods will be burdened with costs properly applicable to a previous period. Although many jobs require no servicing of this kind, others require an amount greatly in excess of what could be provided by one job.

Erectors' Payroll

One of the most troublesome phases of this type of operation is the recording and reporting of erectors' field payroll. At one time we accomplished it by means of a single payroll receipt for each worker signed by him and approved by the erector. These were forwarded to the home office along with the erector's expense report. These receipts became a part of the voucher record supporting the reimbursement to the erector of the amount spent for labor. More recently, with all of the requirements of reporting employees' earnings for Federal income tax information returns and social security reports, a more flexible record became necessary. Since a great number of the employees are on the payroll for only a few weeks and never return, it is inadvisable to make out an earnings record card for each employee because there would be nearly as many earnings record cards as there are employees' labor receipts. For this reason it became desirable to devise some system by which the original receipt would supply all necessary information without building up additional records. Since our company does not use tabulating equipment, we have designed a form which answers our purpose very well.

Each labor ticket is made out in sets of three sheets with pre-inserted one-time carbon. The original sheet is a printed form with the date, name and other employee and job identification

information and a distribution of labor time by days and by job sections. The ticket also shows the total hours, rate, amount earned, O.A.B. deduction, the amount paid, employee's signature, and erector's approval. The duplicate is a plain tissue followed by a one-time two-faced carbon. The triplicate is a card with the edges punched for sorting purposes (Form 5). In operating this procedure the erector fills out the identification information at the beginning of each week and inserts daily the hours worked on each section. At the end of the week the calculations are made and the employee's signature is obtained when he is paid for the week's work. Then the carbon and tissue are removed, the carbon destroyed and the tissue retained by the erector. The original and sorting card are sent in to the main office. The original stays with the expense report to support the reimbursement to the erector and the sorting card goes to a work file from which are made up reports of the progress of the job, social security and income tax returns. The file is also used to supply any other information required as to the employment of any person on erector's payroll. No further detailed records are made up from this file although the cards are summarized monthly by states and are re-sorted alphabetically monthly, quarterly or annually as required for individual information returns.

The Erectors' Daily Cost and Budget Reports (Form 6) are sent in with the erector's expense report and labor tickets. The job sections are listed on the form and the erector inserts the percentage of completion of each section before sending it in. The payroll department adds the payroll by sections with ditto pencil. It then shows the cumulative amount extended by job sections for erection labor and the percentage of completion compared to the budgeted amount for each section. At the end of the job the final report becomes a part of the special cost analysis file. Copies of these reports go to the erector and various other interested parties.

The question naturally arises as to the control of the amount of erectors' field labor. The best check on this is a comparison of the labor costs with the estimate and with the actual costs on similar jobs. Occasionally it is possible to make a surprise audit and pay-off of the labor on a job. The Federal old age benefit law with its provision as to registration of employee,

reporting, and accumulation of earnings by account numbers should have some deterring effect on any possible padding of names.

Production Control and Special Cost Analysis

Two very important activities in this business are the control of production as it progresses through the plant and the analyses of costs and comparisons with the estimates and with other similar jobs. These activities are closely related and will be discussed together although directed by different individuals.

As soon as the customer's order goes to the design department, the production control department takes over sponsorship of it. From that point on through the factory and through the erection until final acceptance by the customer, the order is watched at every step to insure proper specification of final material, avoidance of delays and unnecessary costs, correct methods of manufacture, customer approval of necessary changes, and customer acceptance of additional charges and changes where proper. A production schedule is of considerable aid in this work (Form 7). The first step is the preparation of a check estimate to compare with the one made up for proposal purposes. In performing these functions our cost experience on jobs are carefully watched to insure a reasonable margin of profit.

Besides the information furnished to the proposal department for its guidance in estimating and that furnished to the production control department currently for its use, the special cost department records and analyzes the costs on each special job. Monthly work in progress costs reports (Form 8) are made to the management and to various interested parties showing, for each job in process, the original estimate of costs, the costs incurred to date, the estimated additional costs necessary to complete it, and the total costs *now* estimated. Each of these items is broken down to the various types of costs such as design, factory, erection, reserve, etc. The report also includes jobs completed during the month and jobs on which additional costs are incurred after close-out with the close-out dates indicated. These reports have the jobs in process classified by type of furnace, such as glass lehrs, steel mill furnaces, heat treat furnaces, etc., and the totals are carried for each group as well as for the

aggregate of all groups. A similar report is made up at the end of each year for all jobs closed during the year and all jobs on which costs were incurred during the year which were closed out in previous years (Form 9).

Budgeting

For a business which operates on a complete operating and financial budget plan the various factors entering into the accounts provide some interesting budgeting problems. The first one encountered is the budgeting of orders received. Since this type of equipment is primarily part of heavy goods industry, the fluctuations in orders are much greater than those in standard or consumer goods industries. Where the individual units are large and are individually of large amounts, there is bound to be a wide fluctuation between months. Nevertheless, by establishing an amount which might be expected for a year's time, basing the estimate on general business conditions and other factors affecting the particular industry, a fairly close estimate can be made. Then the other factors are budgeted, always considering the effect on related items.

For a given schedule of orders received, separate schedules are made up of all of the various cost items and of their effect on balance sheet accounts. For example, material purchases will affect accounts payable and inventory, payroll will affect cash, inventory and expense, cost close-out will affect inventory and cost of sales, as well as sales and advanced billings on incomplete contracts, collections will affect cash as well as accounts receivable, etc. Each of these reactions are set up on separate schedules until the whole set of operating and financial budgets is completed. From month to month as actual orders are received, a schedule is made for each special order. These are summarized by sales classes with a separate summary for sales, billing, collections, etc. The budget for the remainder of each year consists of a mixture of the effects of actual orders as well as of contemplated orders.

In addition to information which comes to the various employees involved in working up the schedules for the budget, monthly meetings are held between the engineering, special cost, credit, and budget departments to discuss the status of each job, the estimated cost to complete, the anticipated close-out date or

date when each contact will be accepted by the customer, the billing schedule, and the collection probability. It is from these meetings that the special cost department obtains the information necessary to close out the construction contract cost and the billings of incomplete contracts to earnings. From these meetings and from other sources the special cost, collection, and budget departments obtain the information necessary to make up revised budget schedules monthly covering orders already on the books. The revised budget estimates become a part of our monthly financial reports.

JOB ESTIMATE COST DETAIL SHEET JE #

			FACTORY COSTS								ENGINEERING AND OUTSIDE COSTS							
QUANTITY OR HOURS	WEIGHT	ITEMS	CLASS A MATERIAL FACTORY (@, AMT.)	CLASS B MATERIAL FACTORY (@, AMT.)	MATERIAL BURDEN (@, AMT.)	LABOR (@, AMT.)	LABOR BURDEN (@, AMT.)	SHOP ASSEMBLY (@, AMT.)	TOTAL FACTORY COST	PRODUCTION BURDEN (@, AMT.)	CLASS A MATERIAL (@, AMT.)	CLASS B MATERIAL (@, AMT.)	MATERIAL BURDEN (@, AMT.)	DRAFTING AND ERECTION (@, AMT.)	OUTSIDE LABOR (@, AMT.)	LABOR BURDEN (@, AMT.)	TOTAL COST	FREIGHT (@, AMT.)
			A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R
		C. I. Furnace Parts																
		C. I. Brackets, Sleeves, Etc.																
		C. I. Cuts.																
		Cast Steel (In Or On Pcs.)																
		Forged Steel (In Or On Pcs.)																
		Patterns																
		Machine Hours—Inside Outside																
		TOTAL	E															
		1-0																
		1-0																
		1-0																
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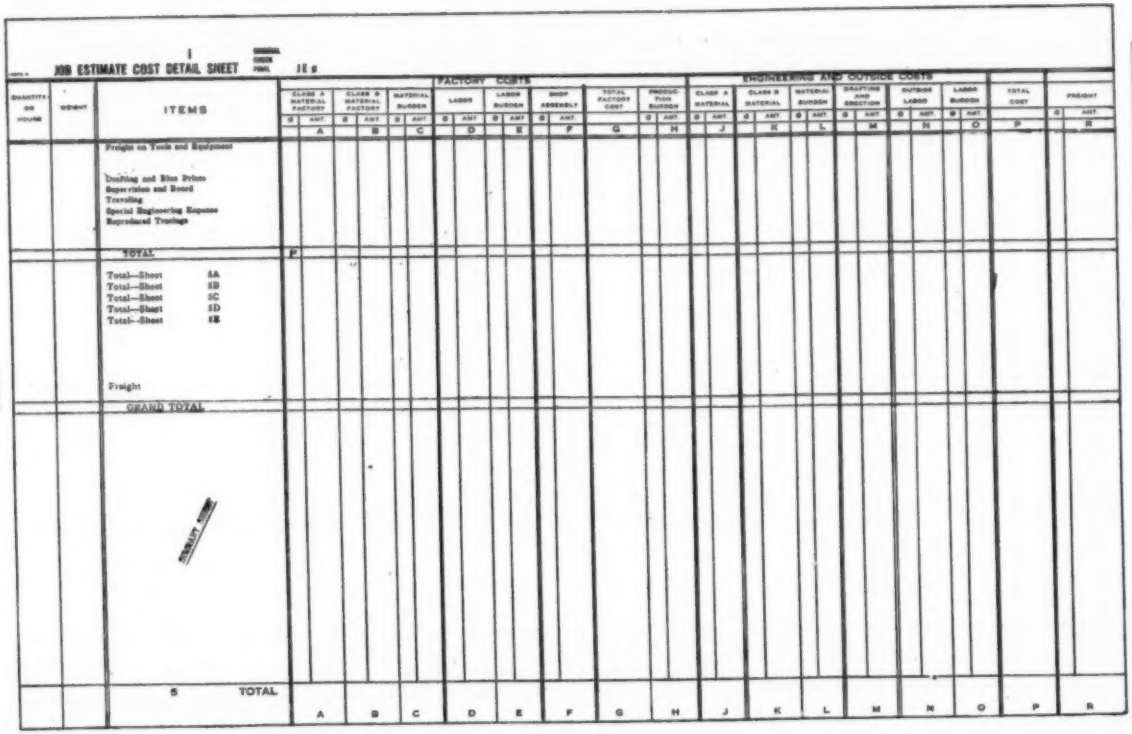
		1-0																
		1-0																
		1-0																
		Assembly Inside and Outside																
		TOTAL DRIVE/CONV./FURNACE	F															
		Without Motors or Controls																
		SB TOTAL	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R

FORM 1A



JOB ESTIMATE COST DETAIL SHEET

QUANTITY DO HOUND	WEIGHT	ITEMS	FACTORY COSTS: CLASS A MATERIAL FACTORY (Q / AMT / A)	CLASS B MATERIAL FACTORY (Q / AMT / B)	MATERIAL BURDEN (Q / AMT / C)	LABOR (Q / AMT / D)	LABOR BURDEN (Q / AMT / E)	SHOP ASSEMBLY (Q / AMT / F)	TOTAL FACTORY COST (G)	PRODUCTION BURDEN (Q / AMT / H)	ENGINEERING AND OUTSIDE COSTS: CLASS A MATERIAL (Q / AMT / J)	CLASS B MATERIAL (Q / AMT / K)	MATERIAL BURDEN (Q / AMT / L)	DRAFTING AND DIRECTION (Q / AMT / M)	OUTSIDE LABOR (Q / AMT / N)	LABOR BURDEN (Q / AMT / O)	TOTAL COST (P)	FREIGHT (Q / AMT / R)
		Freight on Tools and Equipment																
		Drafting and Blue Prints																
		Supervision and Board																
		Traveling																
		Special Engineering Expense																
		Reproduced Tracings																
		TOTAL	F															
		Total—Sheet 5A																
		Total—Sheet 5B																
		Total—Sheet 5C																
		Total—Sheet 5D																
		Total—Sheet 5E																
		Freight																
		GRAND TOTAL																
		5 TOTAL	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R

FORM 1B

D-JE-S

DIMENSIONS, PRICING SUMMARY & APPROVALS

ESTIMATED BY _____ SALES CONTACT BASIS _____ DWG. NO. PR _____
COSTED BY _____ DISTRICT LOCAL _____ ESTIMATE NO. _____
PRICED BY _____ NATL. STEEL _____ DECIMAL CLASS _____
CHECKED BY _____ NATL. HEAT TREAT _____ BASIS OF ESTIMATE _____
PRICING SCHEDULE _____ NO. TO BE ORDERED _____

EQUIPMENT _____

OPERATION _____

FURNACE DIMENSIONS

WIDTH DIM. INSIDE W/S	CASING	DOORS: NO.			
	SUPPORT	LOCATION			
EFFECTIVE WIDTH DIM.	SIDEWALLS	TYPE			
HEIGHT W/S		MATERIAL			
LENGTH PREH'T	ARCH	LINING			
LENGTH HEAT	BOTTOM	WIDTH W/S			
LENGTH SOAK		HEIGHT W/S			
LENGTH COOL		HOIST			
LENGTH INSIDE W/S	FLOOR SPACE				

PRICING CALCULATION

	COST	FACTOR	PRICE					
TOTAL COST								
CONTROLS								
MATERIAL A								
MATERIAL B								
ROYALTIES								
SALES PRICE								
CONTINGENCIES								
SALES PRICE (INC. ROYAL.)								
PRICE ADJ'D FOR DISC. %								

APPROVALS

DEPT.	INITIALS	DATE	REMARKS
ESTG.			
DRFT'G			
ERECT.			
ENGG.			
MATL. DEP.			
PROPOSAL			
GEN. MGR.			

SUPPORTED BY DETAIL SHEETS BY TYPES OF MATERIAL

& DEV PRICE

FORM 2

EPO

EMERGENCY PURCHASE ORDER

SURFACE COMBUSTION CORPORATION

INDUSTRIAL FURNACE ENGINEERS & MANUFACTURERS

2375 DORR ST., TOLEDO, O.

E 11851

PROD. ORDER .....

SUB. ORDER .....

PUT THESE NUMBERS ON INVOICE, SHIPPING RECEIPT AND EACH PACKAGE.

.....

..... DATE .....

QUAN.	DESCRIPTION	PRICE
	VOID—IF THIS ORDER EXCEEDS $100.00	

ENTER ABOVE ORDER AND MAIL DUPLICATE INVOICE WITH SHIPPING RECEIPT SAME DAY GOODS ARE SHIPPED

TO.....

SURFACE COMBUSTION CORPORATION, By.....

FORM 3

NO. _____

RECORD P. O. JOBS ON BACK

SURFACE COMBUSTION CORPORATION

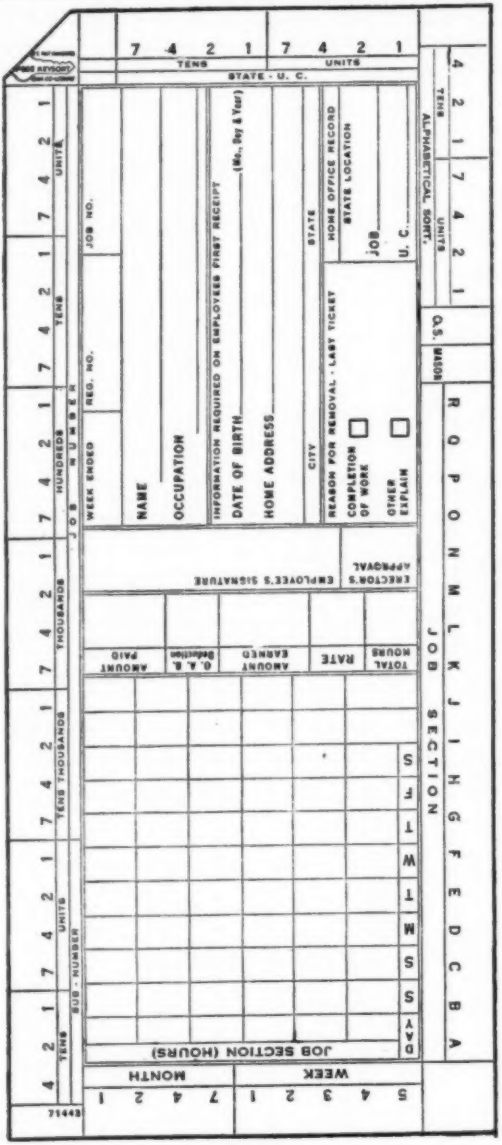
PAYROLL CARD

A-LD

EMPLOYEE _____ SEMI-MONTHLY PERIOD ENDING _____ 193__

ACCOUNT, REQ. OR L. R.	ACCT. NO.	1/16	2/17	3/18	4/19	5/20	6/21	7/22	8/23	9/24	10/25	11/26	12/27	13/28	14/29	15/30	31	TOTAL HOURS	RATE	AMOUNT
LOST TIME		DO NOT RECORD VACATIONS AND HOLIDAYS																		
SUB-TOTAL																				
OTHER DEPARTMENT O. O.																				
WORK IN PROCESS—FORWARDED	183																			
TOTAL																				

FORM 4


STATE - U. C.
TENS
UNITS
ALPHABETICAL SORT
TENS
UNITS
JOB NO.
REG. NO.
WEEK ENDED
JOB NUMBER
HUNDREDS
TENS
UNITS
NAME
OCCUPATION
INFORMATION REQUIRED ON EMPLOYEES FIRST RECEIPT
(No., Day & Year)
DATE OF BIRTH
HOME ADDRESS
CITY
STATE
HOME OFFICE RECORD
STATE LOCATION
JOB
U. C.
REASON FOR REMOVAL - LAST TICKET
COMPLETION OF WORK
OTHER EXPLAIN
CLS.
REASON
EMPLOYEE'S SIGNATURE
FOREMAN'S APPROVAL
TOTAL HOURS
RATE
AMOUNT EARNED
O. A. A. Deduction
AMOUNT PAID
JOB SECTION
DAY
S
M
T
W
T
F
S
JOB SECTION (HOURS)
WEEK
MONTH
BUS - NUMBER
THOUSANDS
TENS THOUSANDS
71443

FORM 5

ERECTORS' DAILY COST & BUDGET REPORT E-OR

CUSTOMER _____ ORDER NO. _____

ADDRESS _____ DATE _____ 19__

EQUIPMENT _____ REPORT NO. _____

ERECTION START _____ 19____ ERECTION FINISH _____ 19__

	BUDGET		ACTUAL			BUDGET		ACTUAL		QUAN.
CONTRACT LABOR	%	AMOUNT	%	AMOUNT	MASON LABOR	%	AMOUNT	%	AMOUNT	ACT.
CASING					SIDE WALLS					
COOLING ZONE					BOTTOM					
IRON & STEEL CASTINGS					PIERS					
BURNER INSTALLATION					PACK TUNNELS					
PIPING					REFRACTORY BURNERS					
FIELD ASSEMBLY					SCAFFOLDS & CENTERS					
DRIVE					ARCH FLAT					
DRIVE PIPING					ARCH SPRUNG					
DISCHARGE MECH.					FLUES					
ALLOY					STEIN RECUPERATORS					
HOODS & FLUES					TILE					
DOOR HOIST					COVER ARCH					
ARCH SUPPORTS					LINE DOORS					
RECUPERATORS					ERRORS & ALTERATIONS					
GAS PREPARATION UNIT										
PAINTING										
ERRORS & ALTERATIONS										
TOTAL CONTRACT TO DATE					TOTAL MASON TO DATE					

SUPERVISION HRS. EST. _____ ACT. TO DATE _____ TOTAL LABOR COST ACT. _____

TOTAL EXPENSES EST. _____ TOTAL LABOR COST EST. _____

TOTAL EXPENSES ACT. _____ ERECTOR'S SIGNATURE _____

FORM 6

ORDER NO._____

PRODUCTION SCHEDULE

SURFACE COMBUSTION CORPORATION

SCHEDULE NO._____

DATE_____

CUSTOMER_____ EQUIPMENT_____

DATE ORDER REC'D_____ APPROVAL DWGS. TO CUSTOMER_____

DATE ORDER ISSUED_____ APPROVAL DWGS. FROM CUSTOMER_____

REC'D AUTHORITY TO START DEPTS._____ START PRODUCTION DRAWING_____

DRAFTING DEPT.						PURCHASING DEPT.					SHOP			
B. M. SECTIONS		B. M. RELEASE DATES				MATERIAL REC'V'L DATES					To Requisition Material		Ready To Ship	
		Promised		Actual		Promised			Actual					
		To Purch.	To Shop	To Purch.	To Shop	Original	Second	Third			Prom.	Actual	Prom.	Actual
B. E.	A													
Casing	B													
Misc. Steel	B													
Tank	C													
Diver Steel	D													
Discharge Tables, Etc.	D													
Cast Iron or Steel	E													
Mechanical Drive	F													
Mechanical Disch. Parts	F													
Door Hoist	G													
Alloy	H													
Misc. Alloy Trays, Etc.	H													
Piping	I													
Hoods and Stacks	J													
Brick	K													
Special Brick or Tile	K													
Historical	L													
Furn'ce Assy. Instructions	M													
Drive Assy. Instructions	N													
Test Instructions	O													
Final	P					Letter No. 6 to Customer					Follow Up No. 6			

ERECTION DEPT.

Erector's File Complete By_____

START { Erection_____ Installation_____

COMPLETE { Erection_____ Installation_____

OPERATING INSTRUCTIONS BY { Erector Eng. Dept.

BILLING MEMO_____

REMARKS

Purchase Order Scheduled From Purchasing Dept. By_____ ORDER NO._____

FORM 7

WORK IN PROGRESS COST REPORT

CLASS _____ SURFACE COMBUSTION CORPORATION AS OF _____ 19 _____

ORDER NUMBER	CUSTOMER & EQUIPMENT DATE OF ORDER, COMP., CLOSING	1	2 DESIGN COSTS	3 DIRECT COSTS	4 FACTORY COSTS	5 ERECTION COSTS	6 SPECIAL COSTS	7 TOT. COSTS BEFORE COLS./RES.	8 PROD. O'HEAD	9 GRATUITOUS RESERVE	10 SALES PRICE / TOTAL COSTS	11 GROSS PROFIT
		ACTUAL										
		ADM., REG.										
		REV. TOT.										
		ORIG. EST.										
		ACTUAL										
		ADM., REG.										
		REV. TOT.										
		ORIG. EST.										
		ACTUAL										
		ADM., REG.										
		REV. TOT.										
		ORIG. EST.										
		ACTUAL										
		ADM., REG.										
		REV. TOT.										
		ORIG. EST.										
		ACTUAL										
		ADM., REG.										
		REV. TOT.										
		ORIG. EST.										
		ACTUAL										
		ADM., REG.										
		REV. TOT.										
		ORIG. EST.										
		ACTUAL										
		ADM., REG.										
		REV. TOT.										
		ORIG. EST.										

* 1 - SPECIAL ENGINEERING 8 - DEVELOPMENT ENGINEERING 9 - ALTERATIONS

FORM 8

JOBS CLOSED TO EARNINGS IN

CLASS _____ AS OF _____

ORDER NO.	CUSTOMER & EQUIPMENT		DESIGN	DIRECT COSTS	FACTORY COSTS	ERECTION COSTS	SPECIAL COSTS	GRAT. SERVICE	PROD. OVER-HEAD	TOTAL COST	SALES PRICE	GROSS PROFIT
		ACTUAL										
		EST.										
		ACTUAL										
		EST.										
		ACTUAL										
		EST.										
		ACTUAL										
		EST.										
		ACTUAL										
		EST.										
		ACTUAL										
		EST.										
		ACTUAL										
		EST.										
		ACTUAL										
		EST.										

FORM 9

FORM 9